

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

<b>Applicants:</b>	Nina Rautonen et al.	<b>Examiner:</b>	Layla D. Bland
<b>Serial No:</b>	10/663,562	<b>Art Unit:</b>	1623
<b>Filed:</b>	September 16, 2003	<b>Docket:</b>	17031
<b>For:</b>	NOVEL USE OF CARBOHYDRATES AND COMPOSITIONS	<b>Dated:</b>	June 23, 2010

**Confirmation No.:** 2985

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

**EXHIBIT B**

# Lactitol

From Wikipedia, the free encyclopedia

**Lactitol** is a sugar alcohol used as a replacement bulk sweetener for low calorie foods with approximately 40% of the sweetness of sugar. Lactitol is produced by two manufacturers, Danisco and Purac Biochem.

## Applications

Lactitol is used in a variety of low food energy or low fat foods. High stability makes it popular for baking. It is used in sugar-free candies, cookies (biscuits), chocolate, and ice cream. Lactitol also promotes colon health as a prebiotic. Lactitol only has 2.4 Calories (9 kilojoules) per gram, compared to 4 Calories (17 kJ) per gram for typical carbohydrates.

Lactitol is listed as an "inactive" ingredient in some prescription drugs, such as Adderall, or amphetamine.<sup>[1]</sup> (<http://www.drugs.com/pro/adderall.html>)

It is used to prevent constipation, e.g. under the trade name *Importal*.<sup>[1]</sup>

## Safety and health

Lactitol, sorbitol, xylitol, mannitol, and maltitol are all sugar alcohols. The United States Food and Drug Administration (FDA) classifies sugar alcohols as "generally recognized as safe" (GRAS). They are approved as food additives, and are recognized as not contributing to tooth decay or causing increases in blood glucose. Lactitol is also approved for use in foods in most countries around the world.

Although endorsed by numerous diet and diabetic websites, Lactitol can cause cramping, flatulence, and diarrhoea in some individuals. This may be in part because "Lactitol is manufactured from whey, the lactose (milk sugar) rich by-product of cheese making and processed dairy foods" and people can be lactose intolerant. Those with other health conditions should consult their GP or dietician prior to consumption.

Lactitol is animal based and is therefore not suitable for vegans.

Lactitol is a cut for cocaine.

## References

Lactitol	
<b>IUPAC name</b>	
4-O- $\alpha$ -D-Galactopyranosyl-D-glucitol	
<b>Other names</b>	
Lactitol Lacty	
<b>Identifiers</b>	
<b>CAS number</b>	585-86-4
<b>SMILES</b>	<div> <chem>O[C@H]1[C@H](O)[C@@H](O)[C@H](O)[C@@H](O)[C@H]1O[C@H]2[C@H](O)[C@@H](O)[C@H](O)[C@@H](CO)O2</chem> </div>
<b>Properties</b>	
<b>Molecular formula</b>	C <sub>12</sub> H <sub>24</sub> O <sub>11</sub>
<b>Molar mass</b>	344.31 g/mol
<b>Density</b>	? g/cm <sup>3</sup>
<b>Melting point</b>	146 °C
Except where noted otherwise, data are given for materials in their standard state (at 25 °C, 100 kPa)	
<b>Infobox references</b>	